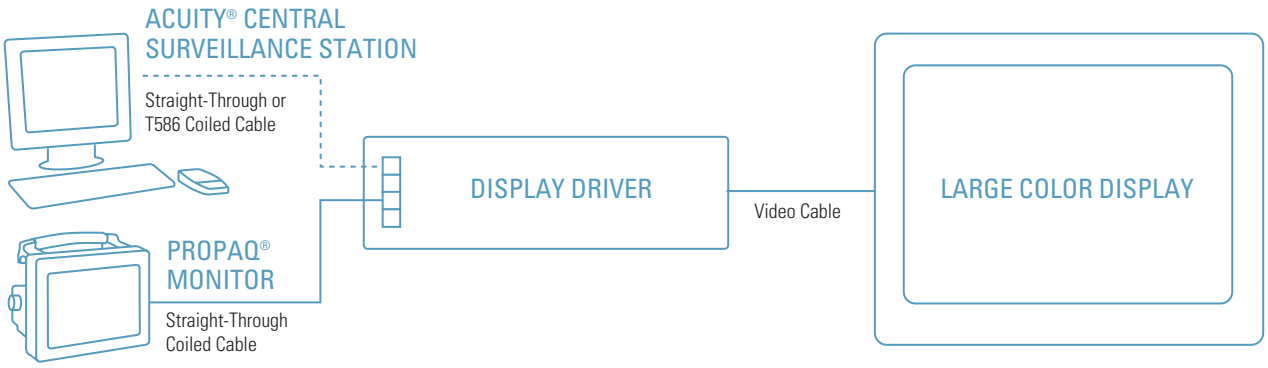
The Welch Allyn® Large Color Display

Provides larger, enhanced visibility of Propaq® monitor patient data at any bedside

Welch Allyn®

Advancing Frontline Care™

Large Color Display Specifications



System

Propaq®

- See Propaq Encore and CS specification sheets for physical, environmental, monitoring and display specifications of Propaq devices

Propaq Software Compatibility:

- Propaq 100 series monitors require software version 8.4 or higher
- Propaq 200 series (Encore, CS) monitors require software version 1.31.01 or higher

Display Driver

Physical Characteristics:

- **Size:** 4.0" (H) x 10.0" (W) x 9.75" (D); 101.6 mm (H) x 254 mm (W) x 247.7 mm (D)
- **Weight:** 5.5 lbs (2.5 kg)

Environmental:

- Operating Temperature: 0 to 40°C
- Humidity: 5% to 95% noncondensing
- Altitude: Sea level to 10,000 feet

Storage:

- Temperature: -40 to +85 °C
- Humidity: 5% to 95%, noncondensing
- Altitude: Sea level to 40,000 feet

AC Input:

- 100 – 230 V-, 0.4 A – 0.25 A, 50/60 Hz

Connectors:

- 15-pin high density D-female; labeled Video; connects to color display
- RJ11 or RJ12; labeled Propaq, Propaq Only or Network; connects to Propaq monitor, Acuity® and/or Remote control.

Large Color Display

Display Output:

- Resolution: 2C48H x 768V/1024 H x 768V selectable
- Horizontal Rate: 31.25 kHz
- Vertical Rate: 58.5Hz Vertical
- Colors: 15

Waveform Sweep Speeds:

- ECG1/ECG2: 25 mm/second
- IBP1/IBP2: 25 mm/second
- SpO_2: 25 mm/second
- CO_2/RESP: 6.25 mm/second

Parameters
(as determined on Propaq)

Heart / Pulse Rate (BPM)

- Label: HR/PR label determined by source on Propaq; 1/MIN unit label available be setting control box

NIBP (mmHg)

- Label: S/M/D identification labels available by setting control box.

IBP1/IBP2 (mmHg)

- Labels: P1, P2, ART, PA, CVP, ICP, UA, or UV; S/M/D identification labels available

SpO_2 (%)

$EtCO_2$ (mmHg, kPa%)

Resp/Breath Rate (Breath per Min)

- Label: RR/BR label determined by source on Propaq; 1/MIN unit label available

Temperatures (°C, °F)

Alarms:

- Setting Status: Bell/Half Bell/No Bell symbols display as determined by Propaq alarm settings; color of symbol matches parameter
- Indication: Parameter in alarm flashes red

Selectable Color Assignments

- Parameters: ECG1, ECG2, RESP, NIBP, INVP1, INVP2, SPO_2, CO_2
- Color selections; Red, Green, Blue, Yellow, Magenta, Cyan, Salmon, Pink , Purple, Amber, Lt. Green, Cream Gray, Brown, White

Timer:

- Elapsed timer: Maximum 9:59:59
- Format: h:mm:ss

Languages:

- English, German, Spanish, French

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Welch Allyn®
Advancing Frontline Care™

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Welch Allyn Propaq® Series Monitors
Mounting Options

GCX
INSTRUMENT MOUNTING SYSTEMS

WelchAllyn®
Advancing Frontline Care™

Mounting Solutions for Any Situation

Known for their legendary ruggedness and versatility, Welch Allyn Propaq® series monitors have long been trusted by healthcare providers around the world. And through our partnership with GCX Instrument Mounting Systems, the world's most trusted monitors now have more quality mounting options than ever before. With a mounting system from GCX, you can equip your Propaq monitors for just about any setting, giving some of the most versatile monitors in the world more flexibility than ever before.

All mounting systems are compatible with Propaq® CS or Propaq Encore® monitors.

M-Series 8" Pivot Arm Wall Mount

The M-Series Pivot Arm Wall Mounting System provides an 8" pivot arm at the wall channel and tilt/swivel adjustments at the Propaq. With a quick-connect, drop-on style mounting interface for easy mounting and removal of the Propaq, the pivot arm is ideal when the user intends to remove the monitor from the mount for transport and requires the arm to be stowed safely against the wall.

All kits include 6" basket, tilt mount and 19" wall channel

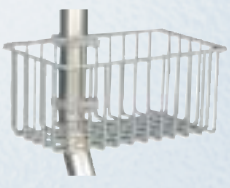
M-Series 8" Pivot Arm Wall Mount Kit for Propaq Monitors with SpO_2	088-0887-00
M-Series 8" Pivot Arm Wall Mount Kit for Propaq Monitors with Expansion Module	008-0888-00

M-Series Flush Wall Mount

The M-Series Flush Wall Mount System offers a low-cost, space-efficient method of securing a Propaq that is used primarily for transport. With a quick-connect interface, mounting and removing your Propaq monitor has never been easier.

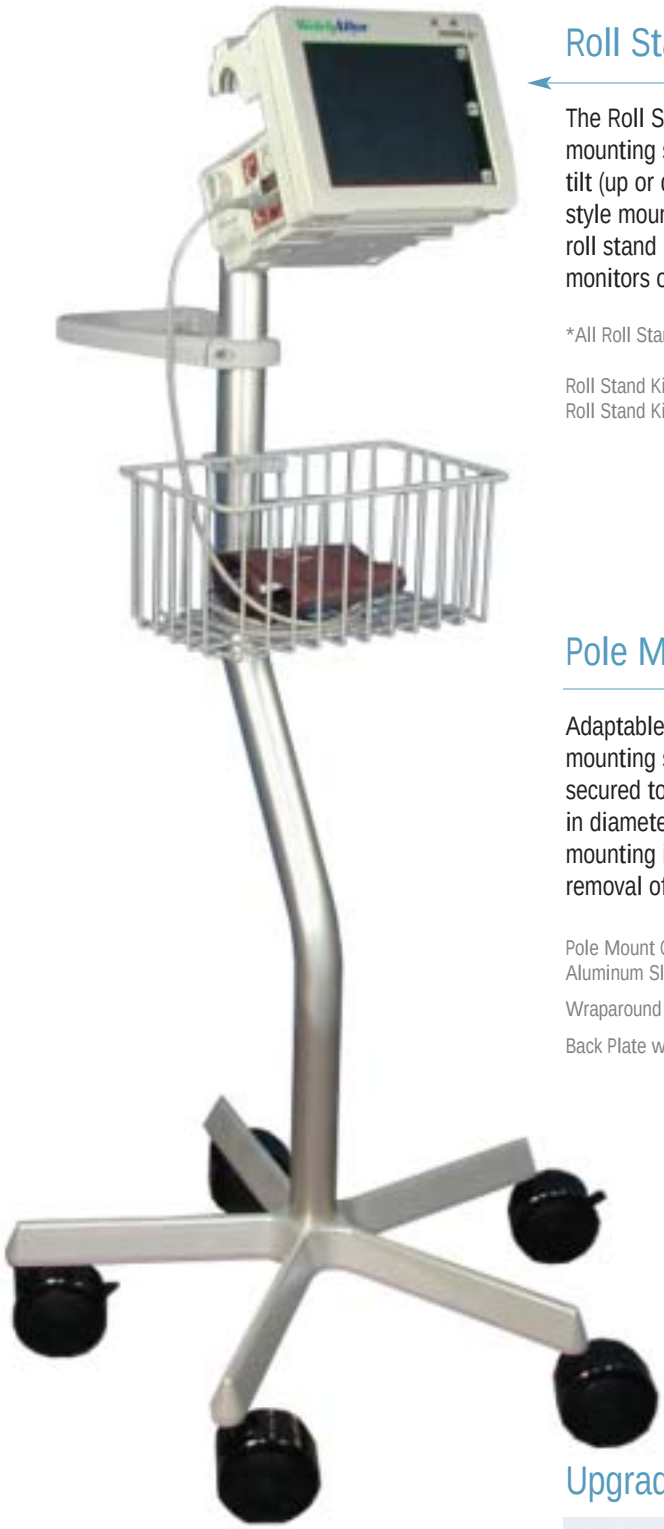
M-Series Flush Mount for monitors with SpO_2*	008-0211-01
M-Series Flush Mount for monitors with expansion module*	008-0208-01
19" (48.3cm) Wall Channel	008-0203-00
6" (15cm) Utility Wire Basket for Wall Mount	008-0200-01

**Wall Channel and Wire Basket are not included with Flush Mounts*



Wall Mount Utility Basket
008-0220-01

19" (48.3cm) Wall Channel
008-0203-00



Roll Stand Mounting Options

The Roll Stand offers a convenient, secure mobile mounting solution for the Propaq. With an adjustable tilt (up or down 20 degrees), quick-connect, drop-on style mounting interface, and a utility wire basket, our roll stand mounts are perfect to take your Propaq series monitors on the go.

*All Roll Stand Kits come equipped with one 6" wire basket

Roll Stand Kit for monitors with SpO_2	008-0797-00
Roll Stand Kit for monitors with expansion module	008-0796-00

Pole Mounting Options

Adaptable to meet your needs, our pole mounting systems allow the Propaq to be secured to poles between 3/4" and 1-1/16" in diameter. They feature a quick-connect mounting interface for easy mounting or removal of the Propaq.

Pole Mount Clamp only (Backplate and Wraparound Pan with Aluminum Slide sold separately)	008-0205-00
Wraparound Pan with Aluminum Slide for monitors with SpO_2	008-0215-00
Back Plate with Aluminum Slide for monitors with expansion module	008-0204-00

It is the responsibility of the user to determine if the pole and its subsequent attachment to a roll stand, anesthesia machine, cart or bed can handle the cantilevered load of the monitor.

Upgrade Kits & Replacement Parts

Drop-On Style Mounting Plate and Adapter for Manual Tilt Mount Style	008-0642-00
Replacement Wraparound Pan for monitors with SpO_2 (for use with Roll Stand or Wall Mount)	008-0889-00
Replacement Back Plate for monitors with expansion module (for use with Roll Stand or Wall Mount)	008-0890-00
Wall Mount Bracket for universal power adapter (requires wall mount slide)	008-0453-00
Wall Mount Slide	008-0793-00

Mounting Options for Propaq Series Monitors

All mounting options compatible with Propaq CS and Propaq Encore models

Description	Order Number
M-Series 8” Pivot Arm Wall Mount	
M-Series 8” Pivot Arm Wall Mount Kit for Propaq Monitors with SpO_2	088-0887-00
M-Series 8” Pivot Arm Wall Mount Kit for Propaq Monitors with Expansion Module	008-0888-00
M-Series Flush Mount	
M-Series Flush Mount for monitors with SpO_2	008-0211-01
M-Series Flush Mount for monitors with expansion module	008-0208-01
19” (48.3cm) Wall Channel	008-0203-00
6” (15cm) Utility Wire Basket for Wall Mount	008-0200-01
Pole Mount	
Pole Mount Clamp only (Backplate and Wraparound Pan with Aluminum Slide sold separately)	008-0205-00
Wraparound Pan with Aluminum Slide for monitors with SpO_2	008-0215-00
Back Plate with Aluminum Slide for monitors with expansion module	008-0204-00
Roll Stands	
Roll Stand Kit for monitors with SpO_2	008-0797-00
Roll Stand Kit for monitors with expansion module	008-0796-00
Upgrades for Drop-On Style Mounting	
Drop-On Mounting Plate and Adapter for Adapter For Manual Tilt Mount Style	008-0642-00
Replacement Wraparound Pan for monitors with SpO_2 (for use with Roll Stand or Wall Mount)	008-0889-00
Replacement Back Plate for monitors with expansion module (for use with Roll Stand or Wall Mount)	008-0890-00
Wall Mount Bracket for universal power adapter (requires wall mount slide)	008-0453-00
Wall Mount Slide	008-0793-00

For more information about Propaq mounting options or Propaq series monitors, contact your local sales representative or Welch Allyn at 1.800.289.2500

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Propaq® CS Specifications

Mainstream CO_2 Sensor
- Mainstream NDIR single-beam, single path/wavelength, ratiometric
- Warm-up time (CO_2 sensor and monitor): 45 sec typical, 3 minutes maximum
- Automatic zeroing
- No routine calibration
- Operating altitude: -2,000 to 15,000 ft (817 to 429 mmHg)
- Dimensions: 1.003 in (H) x 1.036 in (W) x 0.78 in (L) (2.5 x 2.6 x 2.0 cm)
- Weight: 12 g (< 0.43 oz)
- Cable length: 10 ft (3.05 m) nominal

CO_2 Airway Adapters
- Disposable or multi-use
- Size: 15 mm ID (meet ISO specifications)
- Single or multi-use adult/pediatric airway adapter for patients who weigh < 5 kg: Added deadspace: < 6 cc (0.37 cubic in)
- Single use low deadspace airway adapter for patients who weigh < 5 kg: Added deadspace: < 0.6 cc (0.037 cubic in)

Wireless Option
- FlexNet™ Network: 2.4 GHz Wireless Local Area Network (WLAN) and 10/100 Base-T Ethernet network
- Frequency: 2.402 to 2.480 GHz (USA)
- Modulation: GFSK, Frequency Hopping Spread Spectrum (FHSS)
- Output power: 112 mW (maximum)
- IEEE 802.11 compliant
- Wireless Propaq CS monitors per Access Point: 7 (max.)

Nurse Call Option
- Maximum switch current: 1A
- Maximum switch voltage: 30 V AC/DC
- Isolation: 1500 Vrms
- Alarm relay: Energized during apnea alarm or patient alarm
- Customized cable: One end is a 4-pin plug, compatible with the monitor's nurse call connector; the other end must be customized to connect to the local nurse call system

Printer Option
- Thermal sensitive dot
- Numeric annotation: date, time, all active parameters, patient name if connected to Acuity
- Number of waveforms printed simultaneously: up to 3
- Print speeds: 6.25, 12.5, 25.0 mm/sec
- Format: 53 mm wide print area on 60 mm wide paper
- **Operating modes:**
  Continuous: start/stop real-time printouts with all active numerics and up to 3 waveforms
  Snapshot: 8 sec (32 sec for CO_2/Resp) of immediate history for all active numerics and up to 3 waveforms
  Alarm print: 20 seconds total/12 seconds prior to alarming parameter
  Auto print: Snapshot printout every 15 or 30 min, or 1, 2 or 4 hours
  Trend print: On demand or Auto Trend every 4 hours. Up to 8 hours in tabular format.
  OxyCRG trend print: Print-only function (CO_2 or Resp must be installed): 2 min printout of trended HR/PR and SpO_2 numerics and compressed CO_2 or Resp waveforms (CO_2 is priority source), with annotation and MIN/MAX tabular report
  OxyCRG on alarm: Set to print out 60 sec after HR/PR or SpO_2 alarm or 75 sec after BR/RR or apnea alarm
  Apnea ticket: Auto print HR/PR, SpO_2 and elapsed time after apnea event and after 1 minute of continued apnea
  Cuff ticket: Auto print NIBP, HR/PR, SpO_2, CO_2 and RR/BR after each NIBP reading

Alarms
- All parameters: upper/lower limits
- All parameters: Adult/Pediatric/Neonate patient mode-specific limits
- Factory default or programmable settings for all patient modes
- Alarm indicator: red
- Alarm(s) off indicator: yellow
- Audible alarm tone: high/med/low
- Alarm suspend: 90 seconds
- One-button Stat Set for all alarm limits (except Apnea Delay)
- EQ Alert: yellow

Trends
- Tabular numeric format
- All parameters trended/viewable
- Resolution: non-NIBP trends entered every 2 min
- NIBP trends entered after each reading
- Duration: 5 hours non-NIBP trends (up to 150 readings)
- 8 hours NIBP trends (up to 128 readings)
- Page up/down trend view

Inservice Mode
- Includes two sets of simulated patient data including waveforms, for training and education

Color Active Matrix Display
- Type: TFT (Thin Film Transistor) LCD module
- Resolution: 640 x 480 pixels, 1 pixel = R+G+B dots
- Active viewing area: 6.73 x 5.10 in (170.9 x 129.6 mm)
- Pixel pitch: 0.0105 in (0.267 mm)
- Viewing angle: U/D 40°, R/L 60° (typical), ≥ 10:1 contrast ratio
- Contrast ratio: 150:1 (typical); measured in dark room at center of screen
- Display color: 18-bit (6 bits per primary color) Waveforms and matching numerics: Predefined
- Luminance: 200 cd/m² (typical); measured at saturation point
- Response time: 40 ms (maximum); "white to black"

Environmental
- Operating temperature: 5 to 40 °C (monitor), 5 to 40 °C (printer)
- Operating relative humidity: 15% to 95%, noncondensing (MIL STD 810E), printer 35% to 85%, noncondensing (MIL STD 810E)
- Operating altitude: -2,000 to 15,000 ft (-610 to 4,572 m)
- Shipping/Storage temperature: -20 to 60 °C
- Shock: 50 g (monitor); 30 g (expansion module/printer)
- Random vibration: Designed to meet RTCA DO-160D, category C (monitor)
- Electromagnetic compatibility (EMC): per EN60601-1-2, 1993
- Drip-proof per IEC 529, level IPX1 (monitor)

Physical
- Monitor (including handle): Size: 8.2 in (H) x 9.6 in (W) x 5.6 in (D) (20.8 x 24.4 x 14.1 cm) Weight: 7.6 lb (3.4 kg)
- Monitor with SpO_2 Module: Size: 8.2 in (H) x 9.6 in (W) x 7.7 in (D) (20.8 x 24.4 x 19.7 cm) Weight: 10.8 lb (4.9 kg)
- Monitor with Expansion Module (with Printer/SpO_2/$MSCO_2$) Size: 11.4 in (H) x 9.6 in (W) x 7.7 in (D) (28.8 x 24.4 x 19.7 cm); Weight: 14.4 lb (6.5 kg)

Power
- Rechargeable sealed lead acid internal battery pack
- Internal recharger
- Input voltage: 12 to 28 VDC, 25 W
- AC power adapter: 100 to 120 VAC, 50 to 60 Hz (North America/Japan); 220 to 240 VAC, 50 to 60 Hz (International)
- Operating time on battery, typical*: Monitor with SpO_2 option: 4 hours; Monitor with Expansion Module (Printer, SpO_2/CO_2): 3 hours; Monitor only: 2 hours
- Battery recharge time: 6 to 8 hours (when monitor OFF)
- Battery recharge time: 8 to 12 hours (when monitor ON)

Certifications/Standards
- Complies with relevant AAMI, IEC, EN, CSA and UL standards. CE Marked according to the European Medical Device Directive. CSA Certificate of Compliance for use in the U.S. and Canada
  VA Contract V797P-3486k
  DSCP Contract SP0200-97-D-8021

* Fully charged, new battery at 25 °C, NIBP and Snapshot (if applicable) every 15 minutes, all accessories used.

Masimo SET®

Only Masimo SET SpO_2 sensors should be used with Masimo pulse oximetry. Masimo and Masimo SET are registered trademarks of Masimo Corporation.

NELLCOR

Only Nellcor® OxiMax® pulse oximetry sensors should be used with the Nellcor pulse oximetry option. Nellcor and OxiMax are registered trademarks of Nellcor Puritan Bennett, Inc.

Smartcuf®

All Propaq vital signs monitors come standard with Smartcuf technology, a new standard in NIBP accuracy. This patented software offers industry-leading performance and accuracy in the presence of motion artifact.

Welch Allyn®
Advancing Frontline Care™

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The Welch Allyn® Propaq® CS

Vital signs monitoring where you need it, when you need it.

The Propaq CS is configurable with:

- Heart/Pulse rate*
- 3- or 5-lead ECG*
- Motion-tolerant noninvasive blood pressure*
- Temperature (2 channels)*
- Invasive blood pressure (up to 2 channels)
- Masimo® SET Motion-Tolerant pulse oximetry*
- Nellcor OxiMax® pulse oximetry*
- Capnography (mainstream and/or sidestream)
- Impedance respiration/apnea*
- Acuity® Central Station interface (wireless/hardwire)
- Nurse call interface

*Standard Features

Welch Allyn®
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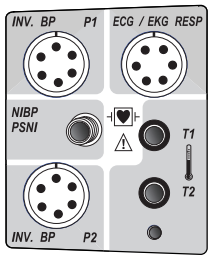
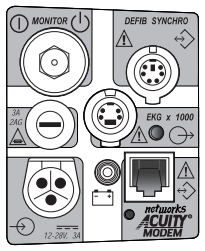
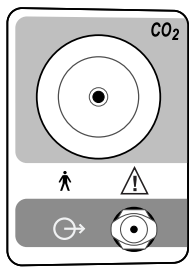


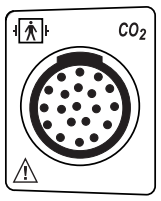
Left Side AAMI Panel
(HP also available)



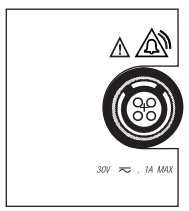
Right Side Panel



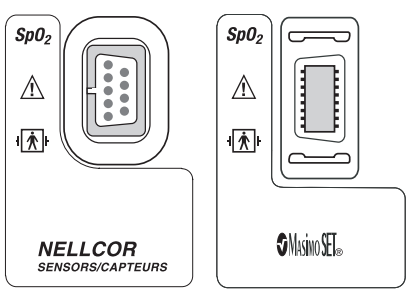
Sidestream CO_2 Option



Mainstream CO_2 Option



Nurse Call Option



SpO_2 Options

Propaq® CS Specifications

General

- Adult/Pediatric/Neonatal factory/custom patient modes
- Electrosurgery interference suppression (ESIS): all channels except Impedance Respiration
- All channels electrically isolated
- Communications option
- Networks to Acuity® Central Station

ECG

- Automatic 3- and 5-lead detection
- Selectable leads: I, II, III, aV_R, aV_L, aV_F, V
- Lead fault detection with auto-reconfigure
- Bandwidth: 0.5 to 40 Hz monitor mode, 0.05 to 40 Hz extended mode (Adult); 0.5 to 120 Hz monitor mode, 0.05 to 120 Hz extended mode (Pediatric/Neonate)
- AAMI 6-pin connector
- Heart rate measurement range: 25 to 300 bpm (display)
- Heart rate accuracy: ± 3 bpm or 3%
- Pacer detection and display
- Defib sync connector
- Real-time ECG output, delay < 3 msec
- ESU and defibrillator protected
- Sweep speed: 12.5, 25, and 50 mm/sec
- User-selectable size (mV/cm): 4, 2, 1, 0.5, 0.2
- QRS tone: high/med/low/off
- 4.2 sec waveform display at 25 mm/sec
- QRS detector range:
  Adult or pediatric mode:
  0.22 to 5.0 mV (RTI)
  Neonatal mode: 0.1 to 5.0 mV
  Neonatal width: 40 to 120 msec
  Pediatric width: 40 to 120 msec
  Adult width: 70 to 120 msec

Noninvasive Blood Pressure (NIBP)

- Oscillometric method
- Automatic (intervals between 1 and 60 min) and manual modes
- Quick action NIBP Start/Stop button
- TurboCuf: 5 min of repeated NIBP readings
- Systolic, diastolic, mean display
- On-screen manometer
- Store and view all data (up to 128 readings)
- Large NIBP numeric display format
- Standard cuff sizes: Neonate #1- #5, Infant, Child, Small Adult, Adult, Large Adult, Thigh
- Cuff overpressure protection
- Typical measurement time: 30 to 45 secs
- Smartcuf® NIBP technology

NIBP

Patient mode-specific operation:

Neonate mode

- Initial cuff inflation pressure: 90 mmHg
- Maximum allowable cuff pressure: 132 mmHg
- Systolic range: 25 to 120 mmHg
- Diastolic range: 10 to 105 mmHg
- Mean range: 10 to 110 mmHg

Pediatric mode

- Initial cuff inflation pressure: 120 mmHg
- Maximum allowable cuff pressure: 170 mmHg
- Systolic range: 30 to 160 mmHg
- Diastolic range: 15 to 130 mmHg
- Mean range: 15 to 140 mmHg

Adult mode

- Initial cuff inflation pressure: 160 mmHg
- Maximum allowable cuff pressure: 270 mmHg
- Systolic range: 30 to 260 mmHg
- Diastolic range: 20 to 235 mmHg
- Mean range: 20 to 255 mmHg

Temperature

- Two YSI 400/700 compatible channels
- Range: 0 to 50 °C
- Display: T1, T2 and Delta temp
- Units: °C or °F
- Accuracy: ± 0.1 °C (10 to 50 °C), ± 0.2 °C (0 to 10 °C)
- Optional HP side panel has one temp channel for YSI 400 probes with HP connector

IBP

- One or two channels
- Pressure range: -30 to 300 mmHg
- Pulse rate measurement range: 25 to 250 bpm
- Display: 5 scales or semiautomatic rescaling
- Format: Sys/Dia/Mean, user selectable
- User-selectable labels: P1, P2, ART, PA, CVP, ICP; UA, UV Neonate mode only
- Transducer requirements: 5 µV/V/mmHg
- Zero adjustment: ± 200 mmHg including transducer offset
- Numeric pressure accuracy: ± 2 mmHg or 2% of reading, plus transducer error
- Standard 6-pin connector, or HP 12-pin on HP-compatible side panel option

Impedance Pneumography Respiration

- Two user-selectable leads: RA-LA, RA-LL
- Automatic cardiovascular artifact (CVA) rejection
- Respiration rate range:
  Adult/Pediatric modes: 0 (apnea), 2 to 150 RPM
  Neonate mode: 0 (apnea), 3 to 150 RPM
- Respiration detection threshold: 140 milliohms or 2X CVA, whichever is greater
- Respiration rate accuracy: ± 2 breaths/min or ± 2 %
- Apnea alarm delay settings:
  Adult/Pediatric modes: 6, 10, 15, 20, 25, 30 sec
  Neonate mode: 6, 10, 15, 20 sec
- Sweep speed: 3.13, 6.25, 12.5 mm/sec

Pulse Oximetry (SpO_2)

Masimo®

- Masimo SET® sensors
- Waveform and pulse amplitude meter
- Pulse tone pitch indicator
- Saturation range: 1 to 100%
- Probe accuracy: 25° to 41°

Nellcor

- Nellcor® OxiMax sensors
- Waveform and pulse amplitude meter
- Pulse tone pitch indicator
- Saturation range: 1 to 100%
- Probe accuracy: 70 to 100%, 28 to 42 °C, DS-100A: ± 3
- Pulse rate measurement range: 25-249 bpm
- Pulse rate accuracy: ± 3 bpm

No Motion:
Adult/Pediatric: 70 to 100% ± 2 digits
0 to 69% unspecified
Neonatal: 70 to 100% ± 3 digits
0 to 69% unspecified
During Motion:
Adult/Pediatric/Neonatal: 70 to 100% ± 3 digits
0 to 69% unspecified

- Pulse rate measurement range (Adult/Pediatric/Neonatal):
  No Motion: 26 to 239 bpm
  During Motion: 26 to 239 bpm
- Pulse rate accuracy:
  No Motion: ± 3 digits
  During Motion: ± 5 digits

CO_2 Option Display

- Screen display: CO_2 waveform and $EtCO_2$ and $INCO_2$ (when in alarm) numerics
- Waveform scale: (maximum) 0 to 100 mmHg, 0 to 14%, 0 to 14 kPa
- Numeric range display: $EtCO_2$: 0 to 99 mmHg, 0 to 13.2 kPa, 0 to 23.1%; $INCO_2$: 8[a] to 25 mmHg, 1.1[a] to 5 kPa, 1.1[a] to 5%
- Units: mmHg, kPa, %; user-selectable
- Sweep speed: 3.13, 6.25, 12.5 mm/sec; user-selectable
- Response modes:
  Fast: 15 sec sampling time period; Normal: 30 sec sampling time period; Slow: 45 sec sampling time period
- Gas compensation: Off: CO_2 value = calculated CO_2 value; O_2 > 50%, No N_2O: CO_2 value = calculated CO_2 value x 1.03; N_2O > 50%: CO_2 value = calculated CO_2 value x 0.952
- Alarm limit ranges: $EtCO_2$: 0 to 99 mmHg, 0 to 13.2 kPa, 0 to 13.2%; $INCO_2$: 2 to 25 mmHg, 0.2 to 5 kPa, % (no lower limit)
- Resolution: 1 mmHg
- Accuracy:
  Mainstream[b]: 0 to 30 mmHg, ± 3 mmHg
  31 to 99 mmHg, ± 10% of value
  Sidestream[c]: 0 to 30 mmHg, ± 3 mmHg
  31 to 99 mmHg, ± 10% of value
- Altitude Error: ± 0.4%/1,000 ft (304.8 m)

Breath Rate Display

- Screen display: Numeric
- Breath rate (BR) source: When CO_2 is active, CO_2 is the BR source. Otherwise, RESP from ECG is the RR source
- Units: Breaths/Minute
- Range:
  Adult/Ped: 0 (apnea), 2 to 150 breaths/min
  Neonate: 0 (apnea), 3 to 150 breaths/min
- Resolution: ± 1 breath/min
- Accuracy: ± 1 breath/min or ± 5%, whichever is greater[d]
- Alarm limits range:
  Adult/Ped: 2 to 150 breaths/min
  Neonate: 3 to 150 breaths/min

CO_2 Performance

- Per ISO 9918:1993(E)/EN 864:1996

Apnea Alarms and Tickets

- Apnea ticket: Set to auto print after apnea event and after 1 minute continued apnea
- Apnea alarm accuracy: ± 2 sec
- Apnea delay setting:
  Adult/Ped: 6, 10, 15, 20, 25, 30 seconds
  Neonate: 6, 10, 15, 20 seconds

Barometric Pressure

- Pressure compensation: automatic
- Operating range: -2,000 to 15,000 ft, -610 to 4,572 m, (817 to 429 mmHg)
- Screen display: Numeric (CO_2 Status Window)
- Units: mmHg or kPa or %
- Accuracy: ± 3 mmHg or 2.5% of difference from calibration pressure, whichever is greater

Sidestream CO_2 Option ($SSCO_2$)

- Sensor type: Sidestream, internal
- Principle of operation: Nondispersive, infrared, single-beam, single-path/wavelength, ratiometric
- Operating ambient temperature: 5 to 40 °C
- Startup time: 30 seconds typical, 3 minutes maximum
- Rise time: 240 ms (10% to 90%) at 175 ml/min
- Delay time: 1.12 seconds maximum[e]
- Total system response time: 1.36 seconds (Rise Time and Delay Time)[e]
- Calibration: Verify semiannually, calibrate only as required
- Sampling chamber: Internal (replaceable by service technician)
- Pneumatic and exhaust system: Integral
- Barometric pressure compensation: Automatic
- BTPS, ATPS, STPD: CO_2 value = calculated CO_2 value x 0.977
- Sampling line: 7-foot sampling line, ID 0.055 in (1.4 mm), for use with disposable single-use cannula (CO_2 only or CO_2 sampling/O_2 delivery)
- Flow rate: 90 or 175 ml/min, user-selectable

[a] Lower if in alarm

[b] Based on these airway conditions: sensor temperature 42 °C, airway adapter temperature = 33 °C, water vapor pressure = 38 mmHg; standard gas mixture = CO_2 in balance air, fully hydrated at 33 °C; barometric pressure = 760 mmHg and flow = 60 ml/min

[c] Based on the following additional airway conditions: sample line = 7 ft, 0.055 in ID (2.13 m, 1.4 mm ID); sample flow rate = 175 ml/min; respiratory rate 50 breaths/min, stable to ± 3 breaths/min; inspired/expired time ratio = 1:2; barometric pressure = 760 mmHg

[d] For Sidestream CO_2, this applies only for BR 60

[e] Based on the following additional airway conditions: sample line = 7 ft, 0.055 in ID (2.13 m, 1.4 mm ID); sample flow rate = 175 ml/min

Mainstream CO_2 Option ($MSCO_2$)

- CO_2 waveform, $EtCO_2$, $INCO_2$ ($INCO_2$ when in alarm), Apnea and Breath Rate display
- Waveform rise time: < 120 msec (to 90% after step change)